

WHAT IS CLAIMED IS:

1. A CAM device comprising:

a CAM array including a plurality of physical banks;
a logical bank-physical bank converter for setting the assignment between logical banks and physical banks, and for outputting a control signal to set the configuration of a physical bank assigned to the logical bank, depending on a logical bank signal indicating a logical bank to be searched,;

a priority circuit for outputting search results in accordance with predetermined priority; and

a cascade circuit for performing a logical operation on the search results output from the priority circuit of the CAM device and a search results supplied from a higher-order CAM device, and transmitting the results of the logical operation to a lower-order CAM device.

2. A CAM device according to claim 1, wherein in searching, if the CAM device includes no physical bank assigned to a logical bank to be searched, the logical bank-physical bank converter outputs a signal to the cascade circuit to inform that there is no physical bank assigned to the logical bank; and

in response to the signal, the cascade circuit outputs

a signal indicating that the CAM device includes no hit entry.

3. A CAM device according to claim 1, wherein when searching is performed, the logical bank-physical bank converter outputs, to each physical bank assigned to the logical bank to be searched, a control signal for dynamically setting the configuration of the physical bank.

4. A CAM device according to claim 2, wherein when searching is performed, the logical bank-physical bank converter outputs, to each physical bank assigned to the logical bank to be searched, a control signal for dynamically setting the configuration of the physical bank.

5. A CAM device according to claim 1, wherein the logical bank-physical bank converter is capable of assigning one physical bank to two or more different logical banks.

6. A CAM device according to claim 2, wherein the logical bank-physical bank converter is capable of assigning one physical bank to two or more different logical banks.

7. A CAM device according to claim 3, wherein the logical bank-physical bank converter is capable of assigning

one physical bank to two or more different logical banks.

8. A CAM device according to claim 4, wherein the logical bank-physical bank converter is capable of assigning one physical bank to two or more different logical banks.

9. A CAM device according to claim 5, wherein said cascade circuit outputs signal HO as logical OR on a signal HIT of the CAM device and an input signal HI, and outputs signal FLO as logical AND on a signal FULL and an input signal FLI.

10. A CAM device according to claim 6, wherein said cascade circuit outputs signal HO as logical OR on a signal HIT of the CAM device and an input signal HI, and outputs signal FLO as logical AND on a signal FULL and an input signal FLI.

11. A CAM device according to claim 7, wherein said cascade circuit outputs signal HO as logical OR on a signal HIT of the CAM device and an input signal HI, and outputs signal FLO as logical AND on a signal FULL and an input signal FLI.

12. A CAM device according to claim 8, wherein said

cascade circuit outputs signal HO as logical OR on a signal HIT of the CAM device and an input signal HI, and outputs signal FLO as logical AND on a signal FULL and an input signal FLI.

13. A CAM device comprising:

a CAM array including a plurality of physical banks;
a logical bank-physical bank converter for setting the assignment between logical banks and physical banks, and for outputting a control signal to set the configuration of a physical bank assigned to the logical bank to be searched, depending on a logical bank signal indicating a logical bank to be searched, to the physical bank assigned to the logical bank, while when the CAM device includes no physical bank assigned to the logical bank to be searched, a signal is output to indicate that there is no physical bank assigned to the logical bank;

a priority circuit for outputting search results in accordance with predetermined priority; and

a cascade circuit for performing a logical operation on the search results output from the priority circuit of the present CAM device and a search results supplied from a higher-order CAM device, and transmitting the results of the logical operation to a lower-order CAM device.

14. A CAM device according to claim 13, wherein said cascade circuit outputs signal HO as logical OR on a signal HIT of the CAM device and an input signal HI, and outputs signal FLO as logical AND on a signal FULL and an input signal FLI.